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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/683,482	01/07/2002	Jia-Fam Wong	ADTP0028USA	2814

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EXAMINER

RUDE, TIMOTHY L

ART UNIT PAPER NUMBER

2871

DATE MAILED: 05/19/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/683,482

Applicant(s)

WONG, JIA-FAM

Examiner

Timothy L Rude

Art Unit

2871

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 February 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2 and 4-11 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2 and 4-11 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>20040225</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claims

1. Claims 1, 2, and 4-10 are pending.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Matsuyama et al (Matsuyama) USPAT 6,469,765 in view of Sato USPAT 6,160,601.

As to claims 1, 3 and 4, Matsuyama discloses in Figures 9 and 10, third embodiment (col. 21, line 36 through col. 22, line 55), a liquid crystal display (LCD) comprising: a first substrate, 900, comprising a first surface; a second substrate, 800, comprising a second surface, the second surface being in parallel with and opposite to the first surface of the first substrate, and a pixel area being defined on the second surface; a second common electrode, 500 (Applicant's first electrode), positioned on the first surface of the first substrate; a first common electrode, 410 (Applicant's second electrode), disposed above the pixel region of the second substrate, the second electrode having side opening portions, 416 (Applicant's first slit) elongated along a first

direction; an isolation layer, 812, disposed on the surface of the second substrate to cover the second electrode; a pixel electrode, 300 (Applicant's third electrode), disposed on the isolation layer and within the pixel region, opening portions, 304 (Applicant's second slit), being defined on the third electrode and along the first direction, the first and second slits being interlaced (per Figures 9 and 10); and a plurality of anisotropic liquid crystal molecules with negative dielectric constant (Abstract) positioned between the first electrode and the third electrode, the longitudinal axis of the liquid crystal molecules being positioned along a second direction horizontally (Figure 3 and col. 21, lines 42-45), and a first angle being formed between the first direction and the second direction; wherein a biased electric field is formed as a voltage is applied between the first electrode and the second electrode, such that (a) a first horizontal biased electric field is formed in the neighborhood of the second slit (Figure 4), the first horizontal biased electric field is perpendicular to the first direction, and the liquid crystal molecules are rotated to make the longitudinal axis of the liquid crystal molecules in the neighborhood of the second slit being in parallel to the first direction, (b) the longitudinal axis of the liquid crystal molecules in the neighborhood of the first electrode maintain along the second direction because no horizontal biased electrical field is formed near the first electrode, and (c) the liquid crystal molecules between the first electrode and the second slit of the third electrode gradually rotate from the second direction to the first direction,

FIG. 9

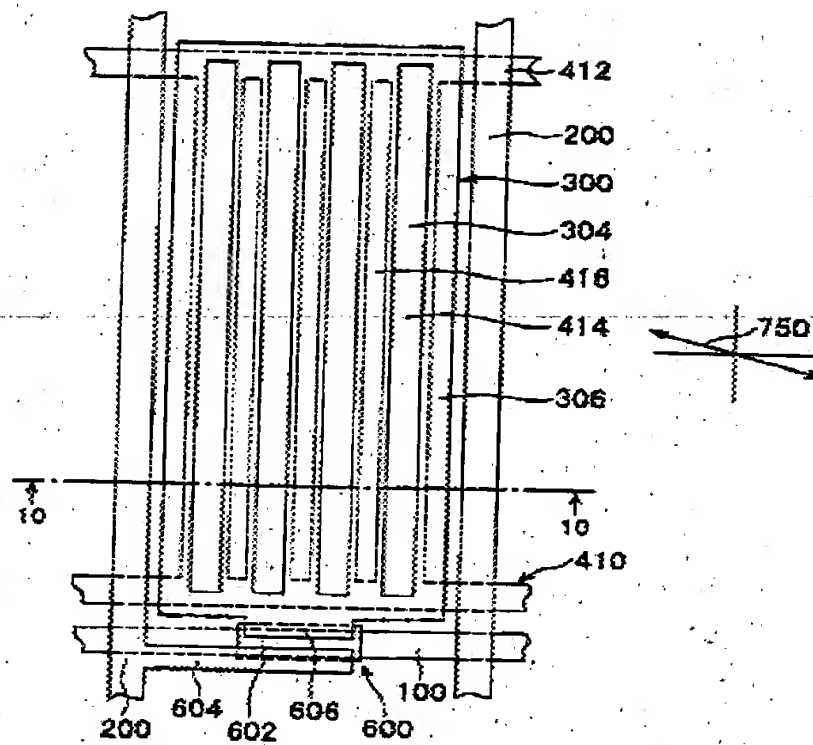
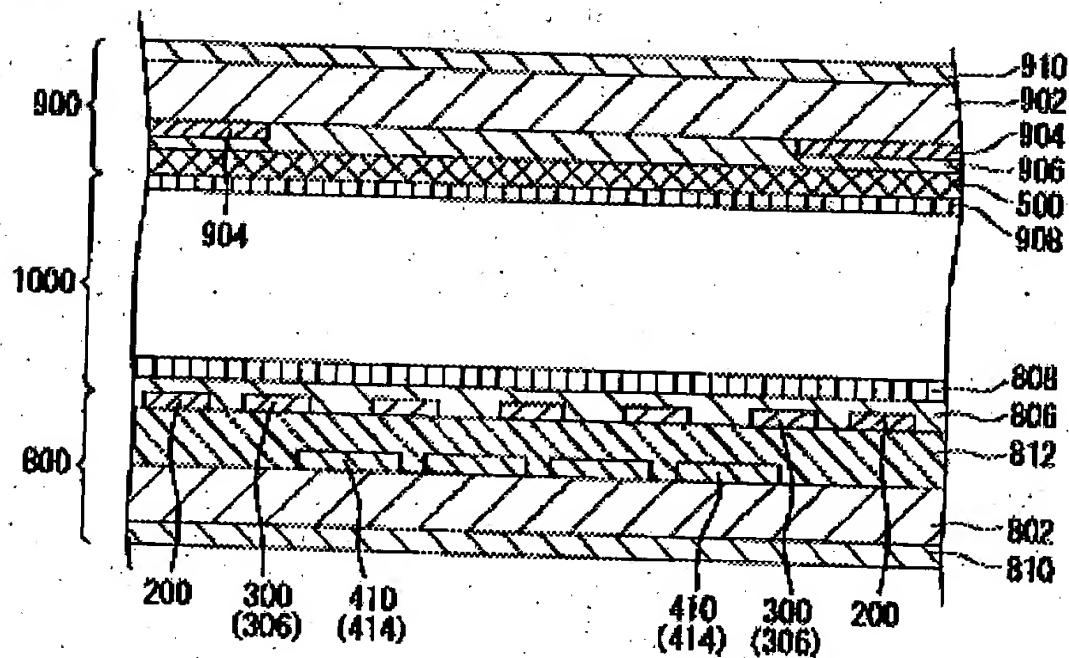


FIG. 10



wherein the second electrode, 410, is a transparent common electrode (Applicant's pixel electrode) (col. 15, lines 14-17 and col. 21, lines 42-45) and wherein the third electrode, 300, is a transparent pixel electrode (Applicant's second common electrode).

However, Matsuyama does not explicitly disclose a display wherein the second electrode, 410, is a pixel electrode and wherein the third electrode, 300, is a lower common electrode.

Sato teaches in his first embodiment (Figures 7 and 8) a TFT substrate that has the pixel electrode above the common electrode with a bottom gate TFT (col. 8, lines 63-65) is functionally equivalent (col. 12, lines 7-11) to his second embodiment (Figures 10 and 11) a TFT substrate that has the common electrode above the pixel electrode with a top gate TFT (col. 11, lines 59-61). Furthermore, reversal of parts is considered an obvious expedient, MPEP 2144.04, VI, A.

Sato is evidence that ordinary workers in the art of liquid crystals would find the reason, suggestion, or motivation to use a pixel electrode below a common electrode as an art recognized equivalent, MPEP 2144.06.

Therefore, it would have been obvious to one having ordinary skill in the art of liquid crystals at the time the invention was made to modify the LCD of Matsuyama with the art recognized equivalent of Sato.

As to claim 2, Matsuyama discloses the liquid crystal display of claim 1, further comprising a first polarizer, 910, positioned above the first substrate, and a second polarizer, 810, positioned below the second substrate (col. 14, lines 58-65 and col. 21, lines 42-45).

As to claim 5, the recitations of: wherein the biased electric field formed between the pixel electrode and the second common electrode is used to accelerate the rotation of the liquid crystal molecules so as to reduce a driving voltage of the liquid crystal display, is an intended use and/or performance recitation in a device claim that is considered inherently met by the structure of Matsuyama in view of Sato.

As to claim 6, the recitations of: wherein the isolation layer is used to isolate the pixel electrode from the second common electrode and avoid a short circuit between the pixel electrode and the second common electrode, is an intended use and/or performance recitation in a device claim that is considered inherently met by the structure of Matsuyama in view of Sato.

3. Claims 7-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Matsuyama in view of Sato, as applied to claims 1-6, and further in view of Tani USPAT 6,392,735.

As to claims 7, 8, and 11, Matsuyama in view of Sato discloses the liquid crystal display of claim 1.

Matsuyama in view of Sato does not explicitly disclose the use of a conductive protrusion.

Tani teaches as prior art the use of a conductive columnar spacer (Applicant's protrusion) projected from the first surface of the first substrate, the protrusion being

electrically connecting the counter electrode (Applicant's first electrode) with the auxiliary line so that the first electrode and the auxiliary line are held at substantially equal voltage. Since the voltage is applied from a large number of locations to the counter electrode, the resistance between the auxiliary line and the counter electrode is so small that the voltage at the counter electrode can be surely maintained at a predetermined value (Applicant's reduce signal delay). Also, since no stress is generated, irregular display may not occur, thus improving the display quality. Further, the data bus lines and the scan bus lines may not be disconnected (col. 1, lines 40-57).

Tani is evidence that ordinary workers in the art of liquid crystals would find the reason, suggestion, or motivation to add conductive protrusions to electrically connect a first electrode on a first substrate to conductive elements of like potential on the opposed substrate so the counter electrode can be surely maintained at a predetermined value, so, an irregular display may not occur, thus improving the display quality.

Therefore, it would have been obvious to one having ordinary skill in the art of liquid crystals at the time the invention was made to modify the LCD of Matsuyama in view of Sato with the conductive protrusions of Tani to electrically connect a first electrode on a first substrate to a third electrode of like potential on the opposed substrate so the counter electrode can be surely maintained at a predetermined value so, an irregular display may not occur, thus improving the display quality.

As to claim 9, Matsuyama discloses a display wherein the third electrode has a width, and the width is reduced by opening portions, 304 (Applicant's second slit), so as to increase an aperture ratio of the display.

As to claim 10, the recitations of: wherein static charges formed on the first electrode are released through the protrusion after the first electrode is connected to the third electrode, is a performance recitation in a device claim that is considered inherently met by the structure of Matsuyama in view of Sato and further in view of Tani.

Response to Arguments

4. Applicant's arguments filed on 21 February 2004 have been fully considered but they are not persuasive.

Applicant's ONLY arguments are as follows:

- (1) Regarding claims 1, 2, and 4-6, the applied references were not considered as a whole.
- (2) The invention is a three-pole configuration as opposed to the two-pole configuration of Sato.
- (3) The combination would work against the teachings of Sato.
- (4) The combination is unobvious and not proper.

(5) Regarding claims 7-11, they are dependent upon claim 1 and should be allowed if claim 1 is allowed.

Examiner's responses to Applicant's ONLY arguments are as follows:

(1) It is respectfully pointed out that the applied references were considered as a whole. Examiner found no contrary teaching in any reference that is considered to lead those of ordinary skill away from the combination that results in the claimed invention.

(2) It is respectfully pointed out that the base reference, Matsuyama, discloses a three-pole structure.

(3) It is respectfully pointed out that the base reference, Matsuyama, discloses the basic three-pole device. Sato teaches that electrodes may be reversed in a display. Also, liquid crystal displays commonly use alternating current, so the electric field produced is likewise alternating. Sato is evidence that reversing or interchanging the pixel electrode and the lower common electrode would have been obvious to those having ordinary skill in the art of liquid crystals at the time the claimed invention was made as an art-recognized species suitable for the intended purpose of comprising switching electrodes (MPEP 2144.07). Also, Applicant cites differences in field patterns that would have been obviously expected to those of ordinary skill in the art, and would have been obviously understood to be satisfactory for the intended purpose of switching the display state. Examiner does not see in the Specification or the Arguments any unexpected results obtained by the claimed invention.

(4) It is respectfully pointed out that the combination is not required to result in Applicant's claimed invention without skill and insight attributable to those having ordinary skill in the art of liquid crystals at the time the claimed invention was made. Rather, it is required that the references as a whole contain teachings that would have provided reason, suggestion, or motivation to combine with ordinary skill to comprise a functional device. In an obviousness type rejection it is expected that those of ordinary skill in the art would know from the teachings of Sato that the electrodes of Matsuyama could be reversed with reasonable probability of success thereby resulting in added design and manufacturing flexibility for the production of a satisfactory display device.

(5) Regarding claims 7-11, Applicant has not further argued Examiner's rejections and has thereby acquiesced.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Timothy L Rude whose telephone number is (571) 272-2301. The examiner can normally be reached on Monday through Thursday.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert H Kim can be reached on (571) 272-2293. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



tlr

Timothy L Rude
Examiner
Art Unit 2871



JAMES DUDEK
PRIMARY EXAMINER